Hospital Inpatient
Utilization and
Charges Profile
State Summary

98

TABLE OF CONTENTS

Acknowledgments	iii
Executive Summary	1
Overall Utilization	1
Utah's Hospitalization Rates	1
Charges	3
Length of Stay	4
Primary Payers	6
The Mix of Payers	
Distribution of Primary Payers	
Managed Care Penetration	7
Type of Clinical Services	
Most Common Conditions: Childbirth, Newborns, and Psychoses	
Top Four Common Procedures	9
Source of Admission	10
Patient Discharge Status	11
Patient Demographic Profile	12
Sex and Age	
Residence	13
Summary Tables	13
Appendix: Definition of Terms Used in This Report	20
List of Tables	
Table 1. Number of Hospital Inpatient Discharges and Hospitalization Rates:	
Utah, 1994-1998	1
Table 2. Hospital Discharges and Discharge Rates for All Diagnosis, 1998	2
Table 3. Total and Average Charges for Hospitalization: Utah, 1994-1998	3
Table 4. Total and Average Length of Stay in Hospitals: Utah, 1994-1998	4
Table 5. Average Length of Stay by Age, Sex and Primary Payer Categories:	
Utah, 1998	5

Utah, 1998	6
Table 7. Enrollment in Non-Governmental Managed Health Care Plans: Utah, 1990-1998.	7
Table 8. Percentage of Discharges and Total Charges by Type of Services: Utah, 1994-1998	8
Table 9. Four Most Commonly Performed Procedures for Hospitalization: Utah, 1998	9
Table 10. Type of Services and Major Diagnostic Categories by Number of Discharges and Total Facility Charges: Utah, 1998	14
Table 11. Number of Discharges, Average Charge and Length of Stay by Selected 62 Diagnosis Related Groups: Utah, 1998	15
Table 12. Patient Profile of Hospital Utilization: Utah, 1998	17
Table 13. Hospital Utilization by Resident Status: Utah, 1998	19
List of Figures	
Figure 1. Age-Sex Adjusted Hospitalization Rates per 1,000 Persons: Utah, 1994-1998	2
Figure 2. Average Length of Hospital Stay for key conditions: Utah, 1998	4
Figure 3. Inpatients With Managed Care as Primary Payer by Patient's Residence : Utah, 1994-1998	7
Figure 4. ER Admissions by Payer Category: Utah, 1998	10
Figure 5. ER Admissions by Patient Age: Utah, 1998	10
Figure 6. Patient Discharge Status: Utah, 1998	11
Figure 7. Age-sex Specific Hospitalization Rates per 1,000 persons: Utah, 1998	12
Figure 8. Number of Discharges by State of Non-Utah Patient's Residence: Utah, 1998	13

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EXECUTIVE SUMMARY

INTRODUCTION

This statewide summary report contains information on hospitalizations, including inpatient demographics, utilization measures, and clinical profiles. This summary can be used to examine healthcare issues of importance to Utahns. Users of this information include our state legislators responsible for health care policy, providers of health care, consumers of health care, and industry analysts conducting research to improve health care costs, access, or conduct quality initiatives.

Trend information will mainly compare the growth or decline of key inpatient indicators over time from 1994 to 1998.

OVERALL UTILIZATION

Utah's Hospitalization Rates

The annual number of hospital inpatient discharges has been increasing steadily since 1994, from 213,421 in 1994 to 232,479 in 1998 (Table 1). The overall hospitalization rates per 1.000 population steadily increased between 1994 and 1998. As can be seen in Table 1, the hospitalization rates per 1,000 Utah residents were 82.7 in 1994 and increased to 90.4 by 1998. The number of total patient days and the average length of stay declined each year between 1995 and 1997 and increased slightly in 1998 (Table 4).

 $oldsymbol{U}$ tah hospitals reported a total of 232,479 inpatient discharges in 1998, incurring over \$1.83 billion in total hospital charges and about 939,987 patient days, with a statewide average stay of 3.65 days, and an average charge of \$7,438 per inpatient (excluding outliers).

Table 1. Number of Hospital Inpatient Discharges and Hospitalization Rates: Utah, 1994-1998

	1994	1995	1996	1997	1998	
Total Number of Discharges	213,421	218,238	222,211	225,492	232,479	
Overall Hospitalization Rates* per 1,000 population						
Age-sex Adjusted Rate**	82.7	84.5	86.0	87.6	90.4	
Non-Maternity Hospitalization Rates*** per 1,000 population						
Age-sex Adjusted Rate**	63.9	64.9	65.2	66.3	68.0	

^{*} Excludes newborns (ICD-9 V30-V39 in any diagnosis codes) and non-Utah residents.

^{***} Age-sex adjusted to 2000 US population projection (US Census Bureau).
*** Excludes newborns (ICD-9 V30-V39 in any diagnosis codes), Deliveries (DRG 370-375) and non-Utah residents.

Age-Sex Adjusted Hospitalization Rates per 1,000 Persons: Utah, 1994-1998 100 80 Hospitalization Rates (per 1,000) 60 40 20 0 1998 1994 1995 1996 1997 (Year) Overall Rate Non-Maternity Rate

Figure 1

Source: Utah Hospital Discharge Database.

Table 2 presents the hospital discharge rates by age and sex for Utah and the US in 1998. Women in their childbearing age have a higher hospitalization rate than men of the same age, whereas men are more likely to be hospitalized when they are less than 15 years old or older than 65 years. Utah's rates are lower than those of the US, across most age and sex groups. Women in their childbearing age show a slightly higher hospitalization rate than their counterparts elsewhere in the US.

Table 2. Hospital Discharges and Discharge Rates for All Diagnosis by age and sex, Utah* and United States, 1998

		Ut	ah		US:	***	Utah:US Rate Ratios		
Age	Me	Men Women Men		Men Women		Men	W/		
	Discharges	Rate**	Discharges	Rate**	Rate	Rate	Men	Women	
Under 15	7,974	27.0	6,551	23.3	43.0	34.1	0.63	0.68	
15 - 44	15,098	30.5	65,106	131.7	44.1	121.1	0.69	1.09	
45 - 64	14,745	85.8	15,344	86.1	117.9	113.0	0.73	0.76	
65 & over	22,545	278.9	25,775	249.6	366.1	357.6	0.76	0.70	
Total	60,362	57.8	112,776	106.8	92.7	135.0	0.62	0.79	

^{*} Note: Newborns were excluded from all calculations. Delivery related charges(DRG370-375) were excluded from the non-maternity rate. Also excluded missing cases and 1996 data for Tooele Valley Regional Hospital (=180 cases).

^{*} Excludes newborns (ICD-9 V30-V39 in any diagnosis codes) and non-Utah residents.

^{**} Age-sex specific rates per 1,000 persons.

^{***} US Rate source: 1997 National Hospital Discharge Survey. Centers for disease control and prevention. National Center for Health Statistics.

Charges

Total charges¹ for hospitalizations in Utah increased from about 1.4 to 1.8 billion dollars per year between 1994 and 1998. The annual increase in the overall total charges was 9.3% in 1995, 6.5% in 1996, 7.0% in 1997 and 6.8% in 1998 (Table 3).

Table 3. Total and Average Charges for Hospitalization: Utah, 1994-1998

	1994	1995	1996	1997	1998
		(% Change)	(% Change)	(% Change)	(% Change)
All Hospitals in Utah	\$1,371,854,899	\$1,500,112,973	\$1,598,169,249	\$1,710,444,484	\$1,825,965,157
Sum of Total Charges*		(+9.3)	(+6.5)	(+7.0)	(+6.8)
Per Capita Total Charge	\$706	\$753	\$790	\$828	\$870
-		(+6.6)	(+4.9)	(+4.8)	(+5.0)
Average Total Charge**	\$6,280	\$6,552	\$6,813	\$7,089	\$7,438
		(+4.3)	(+4.0)	(+4.0)	(+4.9)
Hospitals in Wasatch Front	\$6,780	\$7,108	\$7,363	\$7,687	\$8,143
Average Total Charge**		(+4.8)	(+3.6)	(+4.4)	(+5.9)
Wasatch Front Consumer Price Index:	129.4	133.8	138.0	138.6	140.5
Health Care (Mar.1988=100)		(+3.4)	(+3.1)	(+0.4)	(+1.4)
Wasatch Front Consumer Price Index:	121.3	127.2	132.1	134.2	134.4
Overall Category(Mar.1988=100)		(+4.9)	(+3.9)	(+1.6)	(+0.1)

Source: Utah Hospital Discharge Database. Wasatch Front CPI-First Security Corporation, Economics Department. Salt Lake City, Utah.

The state average total charge for hospitalization in 1998 was \$7,438, an increase of 4.9 percent from the previous year, while the average total charge for hospitals in Wasatch Front reached \$8,143 in 1998, an increase of 5.9 percent from 1997.

Table 3 provides some comparative information on consumer price inflation in the Wasatch Front area during 1994-1998 period. The overall increase in the average charges for hospitalization in the Wasatch Front area between 1994 and 1998 was higher than the percent increase of Consumer Price Index (CPI²) *for Health Care Categories* in the area. The differences between the increase in the CPI and the increase in the average charge are considerably greater in 1997 and 1998.

However, total charges for hospitalization do not reflect actual costs. Hospitals have contracts and discount agreements with different payers that affect actual payment. Information on actual payments is not available in the Utah Hospital Discharge Database.

^{*} Excluded missing values and 1996 data for Tooele Valley Regional Hospital.

^{**} Excluded cases with values above 2.5 standard deviations from the state mean.

¹ Total charges for hospitalization do not reflect actual costs. Hospitals have contracts and discount agreements with different payers that affect actual payment. Information on actual payments is not available in the Utah Hospital Discharge Database.

² The CPI is the weighted average of prices of a specified set of consumer goods and services known as a "market basket", which is then converted into a time series relating prices of one period into prices of another period. The weighted average price of the base period (say 1988) is equal to 100 and prices of other years are related to it as a percentage of the base. The Wasatch Front CPI is the only comparable and available index for the time being.

Length of Stay

Both the total days and the average days of stay in hospitals showed a continuing decrease between 1994 and 1997 and turned around to increase in 1998^{1,2}. The total days of hospital stay in Utah were 939,987 days in 1998 and the average length of stay was shortened by slightly longer than a third day from 3.74 in 1994 to 3.47 in 1998. The 1998 average length of hospital stay in Utah are shorter than the national average by about a day and half and also shorter than the regional average of the West by slightly less than a day (US: 5.1 days, West Region: 4.4 days; Source: 1997 National Hospital Discharge Survey). The per capita hospital stay days also decreased from 0.60 day in 1994 to 0.45 day by 1998.

Table 4. Total and Average Length of Stay in Hospitals: Utah, 1994-1998

Year Length of Stay	1994	1995 (% Change)	1996 (% Change)	1997 (% Change)	1998 (% Change)
Total Days of Stay ¹	1,157,032	1,157,218 (0.0)	910,261 (-21.3)	897,264 (-1.4)	939,987 (+4.8)
Average Days of Stay ²	3.74	3.49 (-6.7)	3.41 (-2.3)	3.33 (-2.3)	3.47 (+4.2)
Per Capita Hospital Stay Days	0.60	0.58	0.45	0.43	0.45

Source: Utah Hospital Discharge Database.

Figure 2 represents the average lengths of stay for some key conditions. In 1998, those who were hospitalized due to pneumonia spent 4.4 days in hospitals on average. Other conditions such as acute myocardial infarction, hip replacement, and obstructive pulmonary disease took about 5 days of hospital stay. Hospitalizations for normal delivery had an average length of stay of 2.7 days during 1998.

Average Length of Hospital Stay for key conditions: Utah, 1998 Obstructive Pulmonary Disease 4.9 Acute Myocardial Infarction 4.9 All Surgery 4.9 Hip Replacement 4.8 Pneumonia 4.4 Normal Newborns 2.7 0 (days)

Figure 2

Source: Utah Hospital Discharge Database.

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¹ Excluded missing values. ² Excluded long-term facilities (psychiatric and substance abuse hospitals. See p19) and cases with values above 2.5 standard deviations from the state mean.

¹ One of the main reasons for the relatively smaller yearly percentage changes between 1996 and 1998 can be attributed to the better quality of the data submitted from hospitals. Less outliers(extreme values) have been noted since 1996.

The average lengths of hospital stay by patient age, sex and primary payer groups are presented in Table 5. The lengths of hospital stay appear to increase with increasing patient age. For those aged 65 and over, the average length of stay was reported as 5.2 days while that of those aged under 15 was 3.4 days. Male patients show about one and a half days longer average length of hospital stay than their female counterparts. The average lengths of stay for primary payer groups have been sub-divided by patients' severity levels in order to reduce the impact of patient characteristics for each payer group¹. Among the patients with severity subclass value 1, the average length of stay ranged between 2.2(Medicaid, Managed Care and Self Pay) and 5.5 with the longest average length of stay reported from patients with Industrial/Worker's compensation as their primary payer. For those with severity level 2, the longest hospital stays were reported from those with other government (6.3 days) as their primary payer while self pay (3.4 days) accounted for the shortest stays. Among patients with severity level 3, the longest hospital stays were reported from those with Blue cross/blue shield (11.2 days) and other government (10.6 days) as their primary payers. For those with the highest severity subclass value, Medicaid (21.8 days) was the primary payer for the patients with the longest hospital stays and those with Medicare (11.1 days) reported the shortest hospital stay days.

Table 5. Average Length of Stay by Age, Sex and Primary Payer Categories: Utah, 1998

Patient Characteristics	Avera	ge Lengt	h of Stay	(days)
Age				
Under 15		3.4	•	
15 - 44		3.5		
45 - 64		4.7		
65 and over		5.2		
Sex				
Male		4.9		
Female		3.5		
Primary Payer	Severity Subclass ¹			
	1	2	3	4
Medicare	3.5	4.7	6.9	11.1
Medicaid	2.2	4.4	8.0	21.8
Other Government	4.5	6.3	10.6	17.2
Blue Cross/Blue Shield	2.5	4.2	11.2	19.4
Other Commercial	2.5	3.9	7.9	18.9
Managed Care	2.2	3.5	6.9	18.8
Self Pay	2.2	3.4	6.3	16.0
Industrial	5.5	-	-	-

Source: Utah Hospital Discharge Database.

The changes in length of inpatient stays might have been influenced by many factors such as changes in medical technology or ambulatory care, requirements of health insurance coverage, and practice pattern. To explain the relationship between quality of care and length of stay, more detailed studies are needed.

¹ Patient Severity Subclass Value.

^{1.} No, or minor complication or comorbidity

^{3.} Major complication or comorbidity

^{2.} Moderate complication or comorbidity

^{4.} Extreme complication or comorbidity

PRIMARY PAYERS

The Mix of Payers

The payer mix of patients varies among Utah hospitals. Payer mix can affect a hospital's financial viability, because different payers reimburse for the same services at different levels. Additionally, uninsured patients who are not eligible for public insurance programs often do not pay for all the care they receive. Hospitals have been able to cover such losses by shifting costs to patients insured by plans with more generous reimbursement. In recent years, increasing pressure from managed care contracts and reductions in government reimbursement rates have reduced the ability of hospitals to shift costs to cover losses. This downward pressure on revenues has resulted in decreased financial viability and increased efforts at cost cutting by hospitals.

Distribution of Primary Payers

Table 6 shows the percentage distribution of hospital discharges by primary payer category in 1998. Fifty-six percent were insured by commercial insurance carriers (Managed Care, Other Commercial and Blue Cross/Blue Shield). Medicare was the primary payer for 20.5 percent of patients and Medicaid was the primary coverage for some 10 percent. Self-pay accounted for 3 percent of all hospital discharges. These numbers do not reflect the amount of bad debt and uncollectible accounts hospitals actually realized. Also, differences in coding of uninsured and self-pay may account for variance in frequencies among hospitals.

Managed Care and other commercial insurance were the primary payer for the highest proportion of age group 0~18 (64%) and 19~64 (59%), while Medicare was the primary payer for 81% of the aged 65 and over.

Table 6. Percentage distribution of inpatient discharges by primary payer categories (%): Utah, 1998.

Age Payer	Overall	0 - 18	19 - 64	65 and over
Medicare	20.5	0.1	4.8	80.5
Medicaid*	9.6	16.6	9.6	0.5
Other government	6.1	4.1	7.4	6.0
Blue Cross Blue Shield**	7.5	9.1	9.6	0.8
Other Commercial	15.2	17.9	18.7	4.4
Managed Care	33.5	45.8	39.9	3.8
Self Pay	3.0	3.4	4.1	0.2
Industrial	0.7	0.1	1.3	0.1
Other/Unknow	3.9	3.0	4.6	3.6
Total	100.0	100.0	100.0	100.0

^{*} includes Medicaid managed care (Medicaid clients were enrolled in HMO's in 1996).

^{**} may include Blue Cross/Blue Shield Managed Care.

Managed Care Penetration

Approximately 61 percent of Utah's total population were enrolled in managed health care plans in 1998 (HMO:813,639, PPO: 462,503)(Table 7). Until 1996, the volume of managed health plan enrollees has been increasing steadily. However, Utah's managed health care plans experienced a significant drop in number of their enrollees in 1997 and attained a slight increase by 1998.

Table 7. Enrollment in Non-governmental Managed Health Care Plans: Utah, 1990-1998

	1990	1991	1992	1993	1994	1995	1996	1997	1998
HMO	591,474	643,033	726,400	803,437	1,029,751	1,163,416	1,394,847	1,231,354	1,276,142
Enrollees		(+9%)	(+13%)	(+11%)	(+28%)	(+13%)	(+20%)	(-12%)	(+4%)

Source: Annual Survey Data provided by Managed Care Plans. Utah Hospitals and Health Systems Association, 1989-1998.

Managed care plans have a higher penetration in Wasatch Front/Utah areas than in rural Utah. About 39 percent of all urban inpatients had a managed care plan as primary payer in 1998, while 22 percent of rural patients were covered by managed care plans. Managed care plans have special challenges in rural areas as rural communities vary in the number of practitioners available and because of the geographic distances, residents must travel to receive care.

Inpatients with Managed Care as Primary Payer by Patient's Residence, Utah: 1994-1998 50 % of all hospitalizations 40 30 20 10 0 1994 1995 1996 1997 1998 (Year) - urban rural all inpatients

Figure 3

Source: Utah Hospital Discharge Database.

Note: Excluded missing values and 1996 Data for Tooele Valley Regional Hospital (=180 cases)

Managed care penetration in Utah appeared to have been stable between 1994 and 1996. Starting from 1997, the proportion of inpatients covered by managed care increased significantly both in urban and rural areas. The percentage differences between urban and rural areas remained stable at around 12~14% level during 1994~1998 period except for 1997, when the gap jumped to 16.8%.

Since payer categories are coded manually by Health Data Committee staff from actual payer name, further analysis and improvement in reporting on payer categories are necessary to determine how much of the differences mentioned above may be due to coding.

TYPE OF CLINICAL SERVICES

Table 8 shows the clinical profile of all inpatient discharges from Utah hospitals in 1994-1998. Newborns and obstetrics together accounted for approximately 40 percent of all *discharges*, yet only approximately 16 percent of all *charges* in 1998 (for details see Table 10).

In contrast, discharges that required a surgery or procedure¹ were 22.1 percent of all *discharges*, but accounted for 46.8 percent of all *charges* in 1998.

Table 8. Percentage of Discharges and Total Charges by Type of Services: Utah, 1994-1998

		Percent of Discharges					Perce	ent of Cha	arge	
	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998
Newborn ¹	17.5	17.7	18.6	18.8	19.2	5.6	5.9	7.0	6.6	7.1
Pregnancy & Childbirth ²	18.9	19.2	19.8	19.9	20.3	7.6	7.9	8.2	8.2	8.9
Medical ³	31.5	32.1	31.2	31.8	31.7	27.6	28.4	27.3	28.6	27.7
Surgical ⁴	25.5	25.2	25.0	23.9	22.1	49.9	49.3	49.4	48.7	46.8
Psychiatric ⁵	4.4	4.0	3.7	3.6	3.5	5.9	5.2	4.9	4.4	3.9
Rehabilitation ⁶	1.2	1.4	1.3	1.0	0.9	3.0	3.0	2.8	2.4	2.3
Other	0.9	0.4	0.5	1.0	2.4	0.4	0.3	0.5	1.2	3.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

- 1. ICD-9: V30~V39.
- 2. Major Diagnosis Codes 14.
- 3. Major Diagnosis Codes 75~102, 475, 146~167, 170~184, 188~190.
- 4. Major Diagnosis Codes 103~108, 110~145, 478~479, 191~208.
- 5. Major Diagnosis Codes 19.
- 6. DRG: 462.

^{1 .} Medical/Procedure or Surgical : Patients are considered procedure or surgical if they had a procedure performed which would require the use of the operating room. DRGs have been classified as either procedure/surgical or medical.

Most Common Conditions: Childbirth, Newborns, and Psychoses

When discharges were grouped according to Diagnosis Related Group (DRG), the most frequent conditions treated in 1998 were those related to normal newborn care (DRG 391=32,969 discharges) and vaginal delivery with no complication (DRG 373=30,953 discharges). The most common non-obstetrical condition causing hospitalizations was psychoses (DRG 430), for which 6,023 discharges were reported (for details see Table 11).

Top Four Common Procedures

The four most frequently performed procedures and total and average charges associated with these procedures are shown in Table 9.

Table 9. Four Most Commonly Performed Procedures for Hospitalization: Utah, 1998

Procedures	Number of Discharges	Average Facility Charges*	Total Facility Charges*
Cesarean Section, Uncomplicated (DRG 371)	5,484	\$5,204	\$28,538,736
Major Joint Procedures & Limb Reattachment (DRG 209)	4,515	\$17,472	\$78,886,080
Uterine and Adnexa Procedures (DRG 359)	4,204	\$5,626	\$23,651,704
Back & Neck Procedures (DRG500)	1,681	\$6,269	\$10,538,189

^{*} Excluding outliers.

SOURCE OF ADMISSION

About 53 percent of all hospitalizations and 68 percent of non-maternity hospitalizations were admitted by physician referrals in 1998 (See Table 12). For Utahns, the percentage of hospitalizations admitted through the emergency department was 20.5% in 1998, which was slightly lower than the previous year (1997: 20.9%). For those who were admitted through the emergency department, 41% had commercial insurance as their primary payer, 39% were with Medicare and 8% were with Medicaid (Figure 4). When compared with overall admissions, patients admitted through ER are more likely to have Medicare and less likely to have Managed Care as their primary payer than patients admitted through other sources. Persons 65 years of age and over accounted for 40% of hospital admissions through emergency department and persons in 15~44 years of age group comprised about 28% of all hospital admissions through emergency department (Figure 5). Persons with age 45 and over are more likely to be admitted through ER than through other sources of admission.

Figure 4

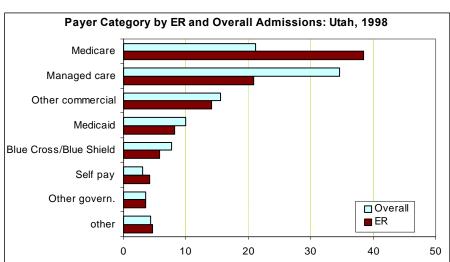
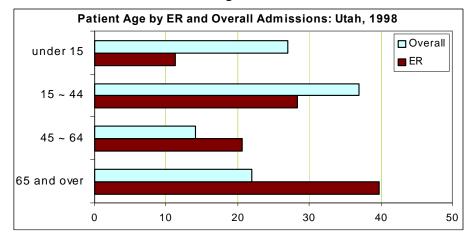


Figure 5



PATIENT DISCHARGE STATUS

About 86 percent of inpatients was discharged to home under self-care. A total of 3,700 cases(1.6%) were transferred to another hospital and 11,862 inpatients (5.1%) were discharged to skilled nursing facilities. A total of 529 cases, mostly drug and alcohol-related conditions, were reported in which patients left against medical advice (for details see Table 12). Statewide hospital mortality in 1998 was 1.4%; it has not experienced a significant change during 1994~1998 period (1.4~1.5%).

Patient Discharge Status: Utah, 1998

Home self care 86%

Other 13%

Under home service care 3%

Skilled nursing facility 5%

Figure 6

PATIENT DEMOGRAPHIC PROFILE

Sex and Age

After excluding new-borns, delivery-related discharges, and those who did not report their age, 60,369 males and 69,876 females were admitted to Utah hospitals during 1998. In volume, more males aged less than 15 (7,978) were hospitalized than their female counterparts (6,503). For those aged 15 and over, larger volume of hospital inpatients were females (63,373, males:52,391). When adjusted to the age-sex composition of overall Utah population, females were more likely to be hospitalized than males for the age group 15 - 54, whereas males were more likely to be hospitalized for the age groups 0 - 14 and 55 and over (per 1,000 Utahns. Figure 7). Except for the conditions related to pregnancy and childbirth, a significant proportion of hospitalizations in 1998 was of the elderly. Age and sex specific hospitalization rates declined after age one and remained fairly stable during young adulthood. Hospitalization rates increase steadily above age 50 for both males and females. For persons 55 years of age and older, males have a greater likelihood of hospitalization than females.

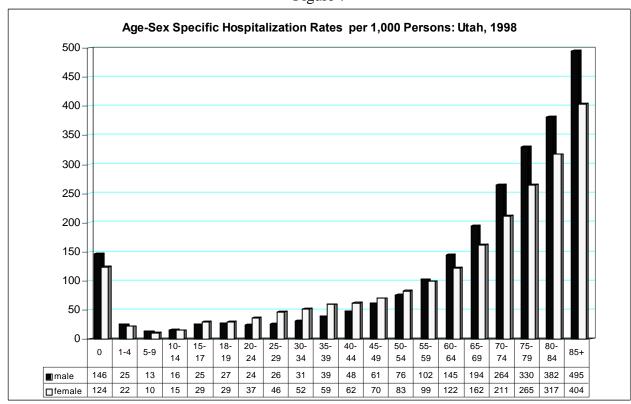


Figure 7

Source: Utah Hospital Discharge Database.

st Excluding new-borns and delivery-related discharges.

Residence

About 15,100, or 6.5 percent of all patients treated in Utah hospitals in 1998 were from other states or countries (See Table 13 for details). Of these, 13,086 came from states adjacent or close to Utah while 2,022 were residents of the rest of the U.S. Figure 8 shows percentage distribution of discharges for non-Utahns by the state of their residence.

Out-of-state patients were more likely than those from Utah to be treated for conditions related to the circulatory system (n=2,796) or to the musculoskeletal system (n=2,026) or to the nervous system (n=1,115). Out-of-patients from states adjacent or close to Utah had a higher proportion of surgical hospitalizations than those from the rest of the U.S. (44% vs. 32%).

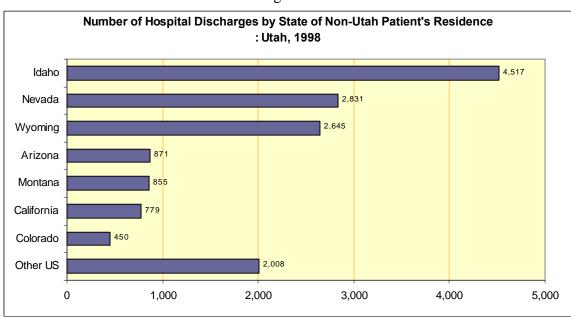


Figure 8

Source: Utah Hospital Discharge Database.

SUMMARY TABLES

The following tables provide summary statistics for Utah hospitals' financial and utilization profile for 1998:

Table 10	Focuses on the type of service and major diagnostic categories by number
	of discharge including total facility charge.
Table 11	Reports the number of discharges, average charges and length of stay by
	selected 62 Diagnosis Related Groups.
Table 12	Provides the patient demographic profile.
Table 13	Describes differences of Utah Residents vs. Out-of-state Residents in Hospital utilization.

Table 10. Type of Services and Major Diagnostic Categories by Number of Discharges and Total Facility Charges: Utah, 1998

Type of Clinical Services	Discharges	%	Facility Charge(\$)	%
All Discharges	232,479	100	1,808,703,386	100
	5, (1)	100	_,,,,,,,,,,,,	100
Normal Newborns (ICD-9: V30-V39)	44,609	19.2	127,988,872	7.1
Obstetric (MDC 14)	47,220	20.3	160,572,884	8.9
Pediatric Medical (Age 0-17)	12,583	5.4	90,745,801	5.0
Pediatric Surgery/Procedure (Age 0-17)	4,790	2.1	81,209,062	4.5
Other Medical	61,115	26.3	410,299,081	22.7
Other Surgery/Procedure	46,504	20.0	765,407,219	42.3
Psychiatric (MDC 19)	8,042	3.5	70,031,873	3.9
Rehabilitation (DRG 462)	2,002	0.9	41,230,980	2.3
Others	5,614	2.4	61,217,613	3.4
Major Diagnostic Categories				
1 Nervous System	10,044	4.3	112,003,300	6.2
2 Eye	387	0.2	2,246,204	0.1
3 Ear, Nose, Mouth & Throat	2,357	1	15,324,827	0.8
4 Respiratory System	15,807	6.8	146,913,670	8.1
5 Circulatory System	23,789	10.2	347,082,056	19.2
6 Digestive System	15,592	6.7	139,840,130	7.7
7 Hepatobiliary System & Pancreas	4,931	2.1	57,777,614	3.2
8 Musculoskeletal System & Conn tissue	19,970	8.6	227,862,016	12.6
9 Skin, Subcutaneous Tissue & Breast	3,117	1.3	24,579,114	1.4
10 Endocrine, Nutritional & Meta System	5,329	2.3	35,588,050	2.0
11 Kidney & Urinary Tract	4,909	2.1	44,694,371	2.5
12 Male Reproductive System	1,447	0.6	10,923,627	0.6
13 Female Reproductive System	7,758	3.3	49,308,985	2.7
14 Pregnancy, Childbirth & Puerperium	47,276	20.3	161,118,408	8.9
15 Newborn & Other Neonates (Perin Period)	45,970	19.8	159,393,800	8.8
16 Blood and Blood-Forming Disorders	1,229	0.5	13,056,646	0.7
17 Myeloproliferative DDs (Diff Neoplasms)	1,965	0.8	37,673,146	2.1
18 Infectious and Parasitic DDs	2,969	1.3	36,182,756	2.0
19 Mental Diseases and Disorders	8,042	3.5	70,031,873	3.9
20 Alcohol/Drug Use or Induced Mental Dis	2,331	1	10,435,408	0.6
21 Injuries, Poison & Toxic Eff of Drugs	2,773	1.2	22,056,105	1.2
22 Burns	293	0.1	14,069,212	0.8
23 Factors Influencing Health Status	2,629	1.1	40,571,637	2.2
24 Multiple Significant Trauma	719	0.3	22,795,149	1.3
25 Human Immunodeficiency Virus Infection	126	0.1	1,864,642	0.1
Unknown	720	0.3	5,310,639	0.3

Table 11. Number of Discharges, Average Charge and Length of Stay by Selected 62 Diagnosis Related Groups: Utah, 1998

Selected 62 Diagnosis Related Groups (DRG)	Groups (DRG) Number of		Average	
	Discharges	Charges*	Length of stay**	
001 Craniotomy age >17 except for trauma	858	22,950	6.36	
003 Craniotomy age 0-17	427	17,866	6.63	
014 Spec Cerebrovascular Disord w/o TIA	2,282	8,107	4.60	
075 Major chest procedures	485	22,390	8.32	
089 Simple Pneumonia & Pleurisy >17 w CC	3,277	7,036	4.52	
091 Simple Pneumonia & Pleurisy 0-17	1,564	4,310	3.00	
098 Bronchitis & Asthma Age 0-17	2,132	3,976	2.91	
104 Cardiac valve proc w cardiac cath	313	61,447	10.35	
105 Cardiac valve proc w/o cardiac cath	677	45,492	7.61	
106 Coronary bypass w cardiac cath	690	40,048	8.36	
107 Coronary bypass w/o cardiac cath	863	34,610	7.17	
108 Other cardiothoracic procedures	226	46,254	11.37	
110 Major cardiovascular procedures w cc	542	32,122	8.29	
112 Percutaneous Cardiovascular Prcd	944	14,522	2.64	
116 Oth perm card pacemakr implnt/aicd lea	3,209	19,637	2.69	
121 Circ disrd w ami CV comp disc alive	824	11,825	4.86	
122 Circ disrd w/o ami CV comp disc alive	808	8,476	2.86	
124 Circ disrdr exc ami, w card cath & cmp	1,242	10,930	3.62	
125 Circ disrdr exc ami, w card cath w/o c	985	7,979	2.00	
127 Heart Failure & Shock	2,682	6,443	4.17	
140 Angina Pectoris	411	3,911	1.69	
143 Chest Pain	1,898	3,825	1.41	
148 Maj Sm & Lg Bowel Prcdrs w CC	1,530	21,079	9.49	
154 Stomach/esophageal/duodenal pr >17 w c	485	22,371	8.63	
167 Appendectomy Exc Comp Prnc D w/o CC	1,586	4,236	1.52	
174 G.I. Hemorrhage w CC	1,859	6,730	3.31	
182 Esoph,Gastro,Misc Digs Disrd>17 w CC	1,541	4,874	3.10	
183 Esoph,Gastr,Misc Digs Disrd>17 /o CC	1,066	3,669	2.07	
197 Cholocystectomy w/o C.D.E. w cc	199	14,676	6.42	
198 Cholocystectomy w/o C.D.E. w/o CC	107	8,674	3.52	
209 Mjr Jnt/Limb Reattach Prcd, Low Extr	4,515	17,472	4.28	
210 Hip & femur proc exc major joint >17 w	909	13,374	5.41	

Table 11. (Continued)

Selected 62 Diagnosis Related Groups (DRG)	Number of	Average	Average	
	Discharges	Charges*	Length of stay**	
219 Low extrem/humer pr exc hip/ft/femur >	1,070	6,877	2.32	
296 Nutritional/misc metabolic disrdr >17	1,188	5,521	3.77	
358 Uterine & Adnexa Prcd Nonmalig w CC	1,496	6,992	3.10	
359 Uterine/Adnexa Prcd Nonmalig w/o CC	4,204	5,626	2.46	
370 Cesarean Section w CC	1,586	6,672	3.86	
371 Cesarean Section w/o CC	5,484	5,204	3.18	
372 Vaginal Delivery w Complicating Diag	4,173	3,546	2.01	
373 Vaginal Deliv w/o Complicating Diag	30,953	2,735	1.69	
374 Vaginal Delivery w Sterilization/D&C	1,792	3,861	1.90	
383 Other antepartum diag w med complic	1,177	3,791	2.70	
385 Neonates, died or transf to otr acute	828	17,856	5.84	
386 Extreme immaturity/resp dist synd, neo	1,030	60,386	27.06	
387 Prematurity w major problems	1,026	20,574	13.40	
389 Full Term Neonate w Major Problems	2,863	4,404	3.33	
390 Neonate w Other Significant Problems	5,833	1,225	1.94	
391 Normal Newborn	32,969	872	1.71	
410 Chemo w/o Acute Leukemia as Sec Dia	935	7,991	3.12	
415 OR proc for infectious/parasitic disea	525	23,839	9.57	
430 Psychoses	6,023	7,718	7.76	
435 Alc/Drug Depnd w Rehab Therapy	1,412	4,296	4.46	
462 Rehabilitation	1,658	19,397	13.94	
468 Extensive OR proc unrelated to p.d.	524	23,260	8.30	
475 Resp sys diagnosis with vent support	747	31,546	10.02	
481 Bone marrow transplant	159	123,626	28.21	
483 Tracheostomy exc mouth/larynx/pharynx	341	138,761	32.72	
486 Other OR proc for mult signif trauma	270	38,387	10.05	
499 Back & neck procedures w cc	467	10,308	3.96	
500 Back & Neck Procedures w/o CC	1,681	6,269	2.21	
502 Knee procedures w/o cc	43	8,782	3.87	
470 Ungroupable	731	8,154	10.34	
All others				

Source: Utah Hospital Discharge Database
* Adjusted by UHDDB Case Mix Index and excluded outliers.
** Excluding outliers.

Table 12. Patient Profile of Hospital Utilization: Utah, 1998

Patient Profile	Discharges	%
	-	
GENDER		
Female	141,456	60.8
Male	91,013	39.1
Unknown	8	0.0
Not reported	2	0.0
<u>AGE</u>		
0-28 days	46,017	19.8
29-365 days	4,764	2.0
1-4 years	4,087	1.8
5-9	2,509	1.1
10-14	3,275	1.4
15-17	5,021	2.2
18-19	5,438	2.3
20-24	19,966	8.6
25-29	19,814	8.5
30-34	13,979	6.0
35-39	11,510	5.0
40-44	9,324	4.0
45-49	8,849	3.8
50-54	8,480	3.6
55-59	8,155	3.5
60-64	8,822	3.8
65-69	10,430	4.5
70-74	12,334	5.3
75-79	12,011	5.2
80-84	9,202	4.0
85-89	5,773	2.5
90 +	2,699	1.2
Unknown		
Not reported	20	0.0
TYPE OF ADMISSION		
Emergency	31,641	13.6
Urgent	99,473	42.8
Elective	50,660	21.8
Newborn	44,342	19.1
Unknown	55	0.0
Not reported	6,308	2.7
SOURCE OF ADMISSION		
Physician referral	122,337	52.6
Clinic referral	671	0.3
HMO Referral	198	0.1
Other hospital	6,670	2.9
Skilled nursing facility	303	0.1
Other health care facility	1,630	0.7
Emergency room	47,567	20.5
Court/law enforcement	67	0.0
Normal delivery	41,677	17.9
Premature delivery	1,583	0.7
Sick baby	613	0.3
Extramural birth	451	0.2
Unknown	1,372	0.6
Not reported	7,340	3.2
1 tot reported	7,540	3.2

Table 12. (Continued)

Patient Profile	Discharges	%
DISCHARGE STATUS		
Home self care	200,284	86.2
Another hospital	3,700	1.6
Skilled nursing facility	11,862	5.1
Intermediate care	677	0.3
Another type of institution	4,446	1.9
Under care of home service	7,043	3.0
Left against medical advice	529	0.2
Under care of a home iv provider	495	0.2
Expired	3,341	1.4
Unknown		
Not reported	102	0.0
PRIMARY PAYER		
Medicare	47,601	20.5
Medicaid	22,242	9.6
Other government	14,240	6.1
Blue cross/blue shield	17,394	7.5
Other commercial	35,424	15.2
Managed care	77,833	33.5
Self pay	7,047	3.0
Industrial	174	0.1
Charity & unclassified	8,970	3.9
CHIP	38	0.0
Not reported	1,516	0.7
LOCAL HEALTH DISTRICT		
Bear River	12,956	5.6
Central Utah	7,721	3.3
Davis County	20,754	9.0
Salt Lake County	86,589	37.3
Southeastern Utah	5,501	2.4
Southwest Utah	14,441	6.2
Summit County	1,901	0.8
Tooele County	3,839	1.7
Uintah Basin	4,854	2.1
Utah County	35,859	15.5
Wasatch County	1,213	0.5
Weber/Morgan	20,913	9.0
Unknown Utah	140	0.1
Outside Utah	15,157	6.5
Unknown	, - ·	

Table 13. Hospital Utilization by Patients' Resident Status: Utah, 1998

Table 13. Hospital Utilization by Patients'						
		TAH RESIDE		NON-UTAH RESIDENTS		
	# discharge	avg. charges	self-pay chrg	# discharge	avg. charges	self-pay chrg
BEAVER VALLEY HOSPITAL	563	1,885	1,554	33	2,169	663
MILFORD VALLEY MEMORIAL HOSPITAL	450	3,373	3,257	10	3,776	1,603
BRIGHAM CITY COMMUNITY HOSPITAL	1,825	4,016	2,380	62	4,883	7,620
BEAR RIVER VALLEY HOSPITAL	511	2,967	2,894	10	3,501	2,315
LOGAN REGIONAL HOSPITAL	8,028	3,842	2,556	800	4,710	3,233
CASTLEVIEW HOSPITAL	2,581	6,876	5,531	45	8,168	15,238
LAKEVIEW HOSPITAL	4,032	7,209	5,372	69	7,453	2,586
DAVIS HOSPITAL & MEDICAL CENTER	7,666	5,047	4,759	103	7,452	3,314
UINTAH BASIN MEDICAL CENTER	2,013	3,322	2,985	38	3,813	5,525
GARFIELD MEMORIAL HOSPITAL	299	2,720	2,932	40	2,349	1,583
ALLEN MEMORIAL	641	3,729	3,868	58	4,767	3,155
VALLEY VIEW MEDICAL CENTER	2,272	3,827	2,563	130	6,078	2,632
CENTRAL VALLEY MEDICAL CENTER	707	3,464	2,508	12	3,753	1,964
KANE COUNTY HOSPITAL	258	3,326	2,939	86	2,975	2,698
FILLMORE COMMUNITY MEDICAL CENTER	228	2,874	3,879	7	1,995	NA
DELTA COMMUNITY MEDICAL CENTER	402	2,840	2,286	12	2,631	NA
JORDAN VALLEY HOSPITAL	4,301	4,641	16,206	68	9,199	NA
ALTA VIEW HOSPITAL	6,478	4,032	3,070	156	5,402	3,474
COTTONWOOD HOSPITAL	14,476	5,170	3,579	252	8,056	3,356
SALT LAKE REGIONAL MEDICAL CENTER	5,767	9,129	NA	176	15,646	NA
LDS HOSPITAL	22,534	10,854	5,628	2,140	21,850	17,690
PRIMARY CHILDREN'S MEDICAL CENTER	7,349	13,487	5,881	1,222	19,720	16,075
ST. MARK'S HOSPITAL	18,177	8,829	6,703	680	13,540	10,557
UNIVERSITY OF UTAH HOSPITAL	15,611	14,576	10,059	3,284	24,392	23,128
PIONEER VALLEY HOSPITAL	2,974	6,971	5,992	52	8,576	6,184
SAN JUAN HOSPITAL	724	2,260	1,633	24	2,621	2,052
GUNNISON VALLEY HOSPITAL	1,202	3,023	3,253	14	4,850	NA
SANPETE VALLEY HOSPITAL	483	3,860	4,345	5	4,717	7,984
SEVIER VALLEY HOSPITAL	1,345	4,153	3,644	58	5,350	7,947
TOOELE VALLEY HEALTHCARE	1,124	6,025	NA	42	6,294	NA
ASHLEY VALLEY MEDICAL CENTER	1,665	4,645	3,155	48	3,867	5,660
OREM COMMUNITY HOSPITAL	3,020	2,355	1,785	19	3,095	1,082
AMERICAN FORK HOSPITAL	6,873	2,982	2,032	69	4,365	2,598
MOUNTAIN VIEW HOSPITAL	5,024	6,901	3,847	77	11,408	5,272
UTAH VALLEY MEDICAL CENTER	19,758	8,431	4,723	363	11,873	8,176
WASATCH COUNTY HOSPITAL	575	2,880	2,036	1	4,002	NA
DIXIE MEDICAL CENTER	9,089	5,815	3,894	1,832	5,896	3,124
MCKAY DEE HOSPITAL	15,668	8,072	4,119	548	15,296	5,668
OGDEN REGIONAL MEDICAL CENTER	8,126	6,402	3,260	184	7,198	1,994
TIMPANOGOS REGIONAL MEDICAL						
CENTER	2,584	5,802	5,627	40	13,389	5,055
BENCHMARK REGIONAL HOSPITAL*	0	NA	NA	38	238,129	NA
OLYMPUS VIEW HOSPITAL*	836	6,342	NA	66	11,117	NA
COPPER HILLS YOUTH CENTER*	103	3,325	2,700	37	5,785	6,240
UNIVERSITY NEUROPSYCHIATRIC INSTITUTE*	1,913	10,210	5,228	146	13,454	11,081
BENCHMARK SOUTH*	806	6,238	NA	39	5,912	NA
SOUTH DAVIS COMMUNITY HOSPITAL	34	3,822	NA	0	NA	NA
HIGHLAND RIDGE HOSPITAL*	137	9,218	9,880	194	11,665	16,286
BONNEVILLE HEALTH SYSTEMS	3	2,032	1,825	1	502	NA
HEALTHSOUTH	320	19,438	5,110	26	37,037	NA
ORTHOPEDIC SPECIALTY HOSPITAL	634	9,639	6,340	147	9,362	NA
VETERANS ADMINISTRATION MEDICAL	4,492	NA	0,540 NA	1,545),302 NA	NA
CENTER			· -	,		· -
TOTAL	216,681			15,108		

Source: Utah Hospital Discharge Database

* Long-term facilities

APPENDIX: DEFINITION OF TERMS USED IN THIS REPORT

To ensure a common understanding, frequently used terms and measures displayed in this report and not explained elsewhere in this report, are defined below.

<u>Discharges</u> - Number of inpatient discharges that occurred during the period from January 1, 1998 to December 31, 1998.

<u>Total Charges</u> - Sum of all charges included in the billing form, including both facility charges and professional fees and patient convenience items. This is different from <u>cost</u> of treatment or <u>payment</u> received by the hospital.

<u>Facility Charges</u> - Sum of all charges related to using a facility. Facility charge is calculated by subtracting professional fees and patient convenience item charges from total charge.

<u>Average Facility Charge:</u> Sum of total facility charges divided number of discharges. The average lends itself to further mathematical manipulation.

<u>Length of Stay</u>: Number of days from the date of admission to date of discharge. If a patient admitted and discharged in the same day this case will be given length of stay of one day.

<u>Average Length of Stay:</u> Average length of stay in days; calculated as LOS divided by related discharges.

Major Diagnostic Categories: Mutually exclusive principal diagnosis categories, from which DRGs are formed. The diagnoses in each MDC correspond to a single organ system or etiology and in general, are associated with a particular medical specialty.

<u>Diagnosis Related Group (DRG)</u>: The DRGs were developed for the Health

Care Financing Administration as a patient classification scheme that provides a means of relating the type of patients a hospital treats (i.e., its case mix) to the costs incurred by the hospital. While all patients are unique, groups of patients have common demographic, diagnostic and therapeutic attributes that determine their resource needs. All patient classification schemes capitalize on these commonalities and utilize the same principle of grouping patients by common characteristics. Each discharge in the UHDDB was assigned into a DRG based on the principal diagnosis, secondary diagnoses, surgical procedures, age, sex, and discharge status of the patient. This report includes 62 selected DRGs that cover about 60% of all discharges that occurred in 1998.

Outlier Cases: Some patients have exceptionally low or high lengths of stay (LOS) or total facility charges. A hospital's charges can be affected by just a few unusually long (or short) or expensive (or inexpensive) cases. These high or low values could be a result of coding or data submittal errors, particularly in length of stay, total charges, or data elements that effect DRG assignments. Other reasons for an exceptionally low LOS or charges could be due to death or transfer to another facility. Exceptionally high LOS or charges could be due to a catastrophic condition. Whatever the reason, these values, referred to as "outliers", distort the averages and were excluded from calculations. LOS or facility charge high outliers are defined in this and succeeding reports as values above 2.5 standard deviations from the mean. Means and standard deviations are APRDRG (All Patient Refined Diagnosis Related Groups) specific and calculated on a statewide basis. The low outliers were defined as a nonnewborn or non normal delivery discharge

with less than \$300 charge. However, the calculations in this report do not exclude low outliers. A preliminary analysis showed that of the discharges that met this definition, a high proportion are in the DRG "Other factors influencing health status," for which it was difficult to determine whether they were true outliers.

Type of Service:

Newborns - Patients with principal diagnosis code ICD-9 V30-V39 (Liveborn infants).

Obstetric - Patients assigned to Major Diagnostic Category (MDC) 14 (Pregnancy, Childbirth, & the Puerperium)

Pediatric - Patients aged 0-17, excluding newborns.

Medical/Procedure or Surgical - Patients are considered procedure or surgical if they had a procedure performed which would require the use of the operating room. DRG's have been classified as either procedure/surgical or medical.

Psychiatric - Patients assigned to MDC 19 (Mental Diseases and Disorders)

Rehabilitation - Patients assigned to DRG 462 (Rehabilitation) or discharged from a rehabilitation facility.

<u>Age</u> - Derived from dates of birth and discharge.

Type of Admission

Emergency - The patient requires immediate medical intervention as a result of severe, life threatening or potentially disabling conditions. Generally, the patient is admitted through the emergency room.

Urgent - The patient requires immediate attention for the care and treatment of a physical or mental disorder. Generally, the patient is admitted to the first available and

suitable accommodation.

Elective - The patient's condition permits adequate time to schedule the availability of a suitable accommodation. An elective admission can be delayed without substantial risk to the health of the individual.

Newborn - Use of this code necessitates the use of a special source of admission codes. Generally, the child is born within the facility.

Premature birth - A baby delivered with time or weight factors qualifying it for premature status.

Sick baby - A baby delivered with medical complications, other than those relating to premature status.

Extramural birth - A baby born in a non-sterile environment.

Source of Admission

Physician Referral - The patient was admitted to this facility upon the recommendation of his or her personal physician not affiliated with a health maintenance organization (HMO).

Clinic Referral - The patient was admitted to this facility upon recommendation of this facility's clinic physician.

HMO Referral - The patient was admitted to this facility upon the recommendation of an HMO physician.

Transfer from a hospital - The patient was admitted to this facility as a transfer from an acute care facility where he or she was an inpatient.

Transfer from a skilled nursing facility - The patient was admitted to this facility as a transfer from a skilled nursing facility where he or she was an inpatient.

Transfer from another health care facility The patient was admitted to this facility as a
transfer from a health care facility other than
an acute care facility or skilled nursing
facility.

Emergency room - The patient was admitted to this facility upon the recommendation of this facility's emergency room physician.

Court/Law enforcement - The patient was admitted to this facility upon the direction of a court of law, or upon the request of a law enforcement agency representative.

Multi-County Local Health District

Bear River - Including Box Elder, Cache and Rich counties.

Central Utah - Including Juab, West Millard, East Millard, Piute, Sevier, Wayne, Sanpete counties.

Southeastern Utah - Including Carbon, Emery, Grand, and San Juan Counties.

Southwest Utah - Including Garfield, Iron, Kane, Washington, and Beaver counties.

Uintah Basin - Including Daggett, Duchesne, Uintah counties.

Weber/Morgan - Including Weber and Morgan counties.

Case-Mix Index

An important source of variation among hospitals in a summary measure of outcome - such as length of stay, total charges, and severity of illness - is the differences in the complexity of the patients they treat. For the

purpose of a meaningful comparison in outcome measures between hospitals, an adjustment factor based on patient complexity should be applied. Therefore, case-mix indices have been calculated for each hospital. A hospital's case-mix index of 1.15 means that the overall case mix of a hospital requires 15 percent greater intensity of resource use relative to the state as a whole.

DEALED VALLEY HOODEAL	0.5000
BEAVER VALLEY HOSPITAL	0.5980
MILFORD VALLEY MEMORIAL HOSPITAL	0.6112
BRIGHAM CITY COMMUNITY HOSPITAL	0.6490
BEAR RIVER VALLEY HOSPITAL	0.5961
LOGAN REGIONAL HOSPITAL	0.6415
CASTLEVIEW HOSPITAL	0.9002
LAKEVIEW HOSPITAL	0.8783
DAVIS HOSPITAL & MEDICAL CENTER	0.6780
UINTAH BASIN MEDICAL CENTER	0.5633
GARFIELD MEMORIAL HOSPITAL	0.6034
ALLEN MEMORIAL	0.6801
VALLEY VIEW MEDICAL CENTER	0.6294
CENTRAL VALLEY MEDICAL CENTER	0.5989
KANE COUNTY HOSPITAL	0.6547
FILMORE COMMUNITY MEDICAL CENTER	0.6006
DELTA COMMUNITY MEDICAL CENTER	0.5286
JORDAN VALLEY HOSPITAL	0.4899
ALTA VIEW HOSPITAL	0.5837
COTTONWOOD HOSPITAL	0.7132
SALT LAKE REGIONAL MEDICAL CENTER	0.9463
LDS HOSPITAL	1.4169
PRIMARY CHILDREN'S MEDICAL CENTER	1.8823
ST. MARK'S HOSPITAL	1.0589
UNIVERSITY OF UTAH HOSPITAL	1.5294
PIONEER VALLEY HOSPITAL	0.8668
SAN JUAN HOSPITAL	0.4809
GUNNISON VALLEY HOSPITAL	0.4946
SANPETE VALLEY HOSPITAL	0.5702
SEVIER VALLEY HOSPITAL	0.7476
TOOELE VALLEY HEALTHCARE	0.8519
ASHLEY VALLEY MEDICAL CENTER	0.7225
OREM COMMUNITY HOSPITAL	0.3375
AMERICAN FORK HOSPITAL	0.4994
MOUNTAIN VIEW HOSPITAL	0.7790
UTAH VALLEY MEDICAL CENTER	1.1267
WASATCH COUNTY HOSPITAL	0.4930
DIXIE MEDICAL CENTER	0.8908
MCKAY DEE HOSPITAL 1.0852	
OGDEN REGIONAL MEDICAL CENTER	0.8807
TIMPANOGOS REGIONAL MEDICAL CENTER	0.6225